U. S. DEPARTMENT OF COMMERCE

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CIVIL AERONAUTICS ADMINISTRATION

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Air Carriers Show Operation Gains In 6-Month Period

Increases of 35.68 percent in the revenue passengers carried and 28.19 percent in revenue miles flown by United States domestic, international, and territorial air carriers during the first 6 months of this year as compared with a similar period in 1940 are revealed in figures compiled by the Civil Aeronautics Administration.

In the period of January–June 1941, the reporting lines carried 1,712,543 revenue passengers and flew 68,789,809 revenue miles, as against 1,262,179 passengers carried in the period of January–June 1940 and 53,661,018 revenue miles flown.

For domestic air carriers alone the gain in passengers carried was slightly

(*See* AIR CARRIERS, *page 292*)

Physical Exam Changed

Applicants for elementary courses in the pilot-training program of the Civil Aeronautics Administration hereafter will be required to pass the same physical examination as that given applicants for secondary training, according to an announcement by Donald H. Connolly, Administrator of Civil Aeronautics.

The new rule reflects the effort of the C. A. A. program to feed pilots into the military services and virtually guarantees that all C. A. A. trainees will measure up to the physical standards set by the Air Corps and the Navy. The principal difference in the new examination which all applicants must take is the addition of an eye refraction test.

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C. A. A. Speeds Up Expansion Of Airway Traffic Control

2 New Centers To Be Opened This Month

The expansion of airway traffic control has been speeded up by the Civil Aeronautics Administration to keep pace with the rapid increase in private, commercial, and military airplanes using the civil airways. Two new airway traffic control centers will be commissioned the latter part of this month, one at Jacksonville, Fla., and the other at Memphis, Tenn.

Seven other centers are expected to be completed by late spring of 1942, bringing to a total of 23 the number of control centers in operation in the United States, each with an average of 1,500 miles of civil airways under its jurisdiction. The additional centers will be at San Antonio, Tex., Boston, Mass., Kansas City, Mo., Denver, Colo., Albuquerque, N. Mex., Minneapolis, Minn., and Great Falls, Mont.

The mounting activities of the present centers are reflected in figures for August. These show an increase in air craft operations and traffic clearances of more than 100 percent over the same month in 1940. Aircraft operations recorded by all control centers during August 1940 totalled 104,362. In August of this year they were 257,792. Traffic clearances issued by all the centers in August last year totalled 60,293. This year the total for August was 121,866.

Of all the aircraft operations in August 1941, the air carriers accounted for 98,689, the Army 114,941, the Navy 9,969, the Coast Guard 139, and private planes 34,054. Of the traffic clearances issued, for the same month, 104,863 were to air carriers, 9,680 to Army planes, 898 to Navy planes, 46 to Coast Guard planes, and 6,379 to private planes.

The addition of 9 control centers to the 14 already in operation will mean an increase in personnel during the 1942 fiscal year from 306 employes for the 14 centers to 471 for the 23. There will be a corresponding increase in operation costs from $789,310 to $1,020,723. For the following fiscal year the sum will be still larger since the full complement of 23 centers will be in operation for the entire year.

For the present fiscal year (1942) $1,170,678 has been allotted to meet the cost of traffic control communication service. By the end of the fiscal year, June 30, 1942, the interphone system will comprise nearly 30,000 miles of leased lines. This system is used chiefly for communications within a control area, between a center and the radio stations in its area. Where a radio station is situated on the border between two areas and has telephone connections with both centers, a hook-up is sometimes effected to connect the two centers directly. But for the most part information is exchanged between centers over a direct teletype system, which will consist of approximately 9,000 miles of leased wires by the end of this fiscal year.

(See *Toward Safer Flight*, page 286)

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CONTENTS

Page

C. A. A. speeds up expansion of airway-traffic control 285
Air Carriers show operations gains in 6-month period 285
Toward safer flight 286
C. A. A. prepares chattel mortgage sample forms 286
Aviation training booklet published 286

PRIVATE FLYING

C. A. B. bulletin discusses take-offs following forced landings 287
C. A. A. pilot trainees make good showing in Eagle Squadron 287
Summary of active certificates 287
Radio-facility charts in monthly publication 287

AIR SAFETY

Severe penalties handed out by Board to curb reckless, show-off flying 288
Individual accident reports 288
Board makes public report on 1940 ground accidents 299

MANUFACTURING AND PRODUCTION

Photographic measuring devices developed in 2 C. A. A. projects 289
Priority granted 7 plants to produce aviation gasoline 289
Third report issued on aircraft flutter 289
New type approvals 289

AIR TRANSPORTATION

Marquette probe closed by Board 290
Changes in CAR affecting transport planes proposed 290
Board issues traffic flow survey 290
Domestic air carrier traffic statistics for 1939, 1940, and the first 9 months of 1941 291
Pan American's south Pacific route amended 292
Recognized dealers 292

OFFICIAL ACTIONS

Orders 297
Regulations 298

AIRWAYS AND AIRPORTS

Air navigation facilities 300
Airport projects approved 300

C. A. A. Prepares Chattel Mortgage Sample Forms

Complying with requests from the industry, the Civil Aeronautics Administration has prepared a suggested form of chattel mortgage and contract of conditional sale for aircraft which meets the requirements of the Civil Aeronautics Act of 1938, as amended. The C. A. A. also has prepared an affidavit to supplement the application for registration (Form ACA 501) in cases where an aircraft has been repossessed pursuant to the provisions of a chattel mortgage or contract of conditional sale and the local laws do not require a public sale.

Copies of the proposed forms have been sent to banks, finance companies, attorneys, and others concerned, with the request that any comment be returned before December 1. Comments or requests for copies of the forms should be addressed to the Certificate Section, Civil Aeronautics Administration, Washington, D. C.

"Inasmuch as financing agreements of this nature are governed by the local statute, the form of conditional sale contract and chattel mortgage used for the sale of an aircraft should be drafted in accordance with the pertinent provisions of the local statute to meet the needs of a particular business," the C. A. A. said. "Therefore, the use of the * * * sample forms will not be mandatory. However, the use of such forms will be to the advantage of the industry in that it will expedite the registration of aircraft and the recording and indexing of aircraft conveyances."

Aviation Training Booklet Published

The Civil Aeronautics Administration has prepared a booklet entitled TRAINING AND EMPLOYMENT OPPORTUNITIES IN AVIATION. Copies may be obtained free from the Publications and Statistics Division, Civil Aeronautics Administration, Washington, D. C.

Subject matter on training opportunities is divided into the three main classes of pilot training, mechanic training, and aeronautical engineering. Under pilot training are described the opportunities afforded by the Civilian Pilot Training Program, the Army Air Corps, Navy flight training, and commercial flying schools. Opportunities for mechanic training are listed under these subdivisions: Commercial mechanic schools, Army and Navy air services, public school and vocational courses, supplementary training for employed,

(*See* TRAINING BOOKLET, *page 292*)

As the number of planes using the civil airways increases, so does the danger of collision in the air. It is the primary purpose of the airway traffic control system operated by the Civil Aeronautics Administration to prevent the collision of aircraft in flight within the limits of the civil airways. A civil airway includes all the navigable airspace above a 20-mile-wide path on the ground designated by the Administrator of Civil Aeronautics.

In its job of maintaining an orderly flow of traffic over these highways of the air, airway traffic control has jurisdiction over all classes of planes—airline transport, private, Army, and Navy. The extent of the control depends on the weather. When visibility is greatly restricted, control is complete and positive. In such a case instrument flight rules apply, and all craft on the airways are subject to control.

This control is exercised in three ways. There is vertical control—planes are assigned different flight levels; horizontal control—planes are cleared at specific time intervals; and lateral control—pilots are instructed to fly on different sides of an on-course signal. This is a signal projected by radio range stations along the airways which enables a pilot to know when he is flying a straight course.

Under instrument flight rules, only planes with two-way radio and necessary navigational instruments are permitted to use the civil airways. A recent amendment of the Civil Air Regulations provides that all planes flying more than 3,500 feet above the ground, regardless of weather conditions, must be equipped with two-way radio and the pilots must observe all the other traffic control regulations applicable to instrument weather conditions.

Civil airways of the United States are divided into 23 control areas. Nominally an airway control center has jurisdiction over each of these areas. At present there are 14 centers in operation, and additional ones are being established. The portion of the civil airways under control averages 1,500 miles for a center.

A pilot intending to fly under instrument weather conditions must submit a flight plan to the airway traffic control center within the control area of which flight is proposed. This he can do in person, by telephone, or by radio. He must give the proposed time of departure, proposed cruising altitude, point of

(*See* SAFER FLIGHT, *page 300*)

Summary of Active Certificates

(As of November 1)

	1941	*1940*
Pilot certificates of competency	94, 080	55, 000
Airline transport certificates of competency	1, 559	1, 318
Student-pilot certificates	98, 133	59, 745
Glider-pilot certificates of competency	166	138
Student glider-pilot certificates	556	489
Mechanic certificates of competency	13, 465	10, 798
Parachute-rigger certificates of competency	593	440
Certificated aircraft	24, 068	15, 500
Uncertificated aircraft	443	522
Certificated gliders	60	38
Uncertificated gliders	114	104
Ground-instructors certificates of competency	4, 508	1, 450
Air-traffic control-tower-operators certificates of competency	387	246
Aircraft dispatchers certificates of competency	411	310

Radio Aids Publication Now Issued Bimonthly

AIR NAVIGATION RADIO AIDS, published by the Civil Aeronautics Administration for distribution to pilots, has been placed on a bimonthly basis. Under the new schedule, the former monthly publication will be issued next on December 1 and on alternate months thereafter. In order to keep the publication as current as possible, the C. A. A. will issue correction sheets for the alternate months when the booklet is not published. These correction sheets will carry notification of all changes in air navigation radio aids which have been made since the last issue of the publication.

The bimonthly publication will carry the same information as appeared in the monthly editions. This includes airway radio facility charts on which are indicated all the civil airways and aeronautical radio facilities in the United States.

Information shown on these flight charts includes minimum safe altitudes, designated radio fixes and mileages between these fixes, danger areas, airport locations and elevations, airway traffic control areas, as well as name, identification signal, frequency, and class of all aeronautical radio stations in the United States and Canada, with the exception of air-line radio stations.

The text of the publication gives in tabular form all data, including broadcast schedules, pertinent to aeronautical radio stations in the United States, Alaska, Canada, Hawaii, Cuba, and Puerto Rico. Also tabulated are an alphabetical listing of station identifications, station allocations by frequency, statistical summary of all C. A. A. radio facilities, control airports, airway traffic control centers, and telephone numbers of C. A. A. communication stations and Weather Bureau aerological stations.

C. A. B. Safety Bulletin Discusses Take-Offs Following Forced Landings

The following is a safety bulletin issued by the Civil Aeronautics Board and written by Alexander N. Troshkin, Safety Bureau powerplant specialist:

Several instances of serious accidents have been reported due to powerplant failures which occurred after a resumption of flight following a successful forced landing. The first forced landing in each case was successful because the altitude at which the powerplant failure occurred was sufficient to permit the pilot to select a suitable landing area. However, the second failure, encountered during the subsequent resumption in flight, usually occurred immediately after take-off at an altitude which did not allow any selection of adequate landing area. The pilot, under these conditions, has no choice other than to effect the best possible landing in the area along his original flight path, regardless of the suitability of the terrain, unless he is foolhardy enough to attempt the always dangerous and often fatal low-altitude turn towards his original take-off area. In the cases reported, the second landings were along the flight path but in terrain covered with trees, fences, or buildings; and the landings resulted in severe damage to the aircraft and, in some cases, serious injuries to the pilot. Mechanically, the reason for both the successful and unsuccessful forced landings was a powerplant failure. However, in each case, it can definitely be proven that the second failure and accident had as its largest contributing factor poor judgment and carelessness on the part of the pilot in attempting a take-off without being absolutely certain that the cause of the original power-plant failure had been eliminated.

Generally, in this type of accident, the pilot reports that subsequent to the first forced landing he checked the engine by starting and running it up. If the run-up proves satisfactory, he then immediately assumes that the initial cause of the failure had cleared up and was probably due to a "temporary" fuel flow stoppage. In some cases, pilots have admitted that the first failure was due to engine icing, even though full available heat had been applied. Notwithstanding this, a second take-off is made into the same potential icing weather conditions.

There are relatively few engine difficulties that disappear of their own accord after an initial loss of power or failure. Those that do are failures due to excessive cooling at closed-throttle glides, failure to clear engine during glides, and wet ignition due to heavy precipitation. In general, all other types of powerplant failures require some mechanical adjustment or repair before the difficulty is completely eliminated.

A cardinal rule of every pilot should be *not* to take off after a forced landing

(*See* TAKE-OFFS, *page 294*)

C. A. A. Pilot Trainees Make Good Showing In Eagle Squadron

Two-thirds of the American Eagle Squadron in England learned to fly in the Civil Aeronautics Administration's pilot training program, according to word received by the C. A. A. from Pilot Officer Harold Strickland, a Chicagoan new stationed at London as a member of the American Eagle Squadron, R. A. F.

Strickland says he finds it "amazing" that many of the boys who are now "hitting the Jerries hard . . . hopped off on their first solo flight in a C. C. A. Cub about 12 months ago—and today they can fly a tight formation, in Hurricanes, in the clouds."

Emphasizing the important lessons to the American military forces of "mass wartime aviation," Strickland stated that "it's a good thing that a reservoir like the C. A. A. is set up for them to draw from as a starter."

The C. A. A. training program, begun in 1939, has fed more than 10,000 of its students to the Army and Navy air forces and, in all, has created more than 55,000 new pilots. Almost 15,000 students are currently enrolled at more than 500 colleges and other centers.

Asserting that "I have seen nothing that reflects on the C. A. A. courses," Strickland cites this example of performance by C. A. A. graduates with the American Eagles:

"Yesterday we were on a Squadron search at altitudes. At 25,000 feet we went into a tight formation and flew through the clouds, then let down. When we made contact we were all in correct positions."

Severe Penalties Handed Out by Board To Curb Reckless, Show-off Flying

Offenders Grounded As Safety Measure

Show-off pilots who endanger the lives of others by low acrobatics and other reckless flying are being dealt with severely, the Civil Aeronautics Board stated in a recent safety bulletin.

"These pilots, by displaying a careless disregard for the rights of others, by unnecessarily endangering other people's lives, showed that the Government had misplaced its trust in them when it issued their flying certificates," the bulletin explained. Full text of the bulletin follows:

Pinned to the Ground

Vanity in the air does not pay!

Ultimately the "law of gravity" or the "law of the land" will pin the vain or show-off pilot to the ground.

Low acrobatics and other "show-off" flying accounted for 60 percent of fatal or serious accidents in miscellaneous or private flying in 1940.

In addition, the Civil Aeronautics Board deals severely with pilots who are reported for reckless flying. In 1 month alone, July 1941, the Board suspended or revoked the certificates of 13 pilots. Eight of those were student pilots and five were private pilots. The Board probably saved several of these pilots from an untimely end and, what is even more important, prevented them from injuring others.

These pilots, by displaying a careless disregard for the rights of others, by unnecessarily endangering other people's lives, showed that the Government had misplaced its trust in them when it issued their flying certificates.

Violations which caused offenders to be "grounded" included acrobatic flying at dangerously low altitudes or over congested areas, over open-air assemblies of persons, over air-ways, or without being equipped with proper parachutes. Some of these violations included student pilots carrying passengers other than instructors and with the dual controls connected. These are double violations of the regulations.

One student took off in the path of a landing aircraft. Another gave flying instruction to another student with dual controls operative. One student pilot performed very low acrobatics over a crowded beach and over two municipalities while under the influence of intoxicating liquors.

A typical case follows:

"The respondent navigated aircraft acrobatically on the civil airway. He dived from an altitude of approximately 400 feet down to an altitude of approximately 50 feet followed by a steep right chandelle, which approached a stall at approximately 300 feet. Respondent was not equipped with a proper parachute.

"The respondent navigated aircraft on a civil airway over a congested area at an altitude of approximately 100 feet, and he flew over an open assembly of persons on a beach in the vicinity at an altitude of approximately 100 feet. The carelessness and disregard for the lives and safety of others and the disregard for the Civil Air Regulations manifested by the respondent constitutes sufficient cause to refuse him any type of pilot certificate at this time."

Safety regulations must be respected. The Board is determined to discourage careless and reckless disregard for the lives and safety of others by taking such violators out of the air.

[Individual Accident Reports]

Pilot Stalls in Attempt to Avoid Obstruction

A stall which resulted from an attempt to avoid an unmarked obstruction caused the crash near Monmouth, Ill., on July 4, 1940, in which commercial pilot, Robert McVey; a revenue passenger, F. M. Sadler; and an infant, William Sadler, were fatally injured. Lois Bland, age 12, received serious injuries.

Pilot and passengers had taken off from the Monmouth Airport for a local sightseeing trip. Upon the conclusion of this flight, the pilot, coming in for a landing toward the west, did not observe a newly erected, unmarked pole until in close proximity to it, at which time he placed the aircraft, a Piper, model J–5A–75, in a steep climbing attitude. The plane stalled at an altitude of about 50 feet, fell off to the ground, and was demolished.

Subsequent investigation disclosed that Pilot McVey, who had logged approximately 216 hours, and his brother, who were operators of the airport, were aware that a hot-air balloon was being prepared for inflation near the east end of the east-west runway in connection with an Independence Day celebration at a nearby park. Both had been carrying passengers from the field and were loading and unloading passengers beside the point where the balloon crew was working. After McVey's departure on the subject flight there had been erected a pole approximately 32 feet high to be used in inflating the balloon. Investigation indicated that no arrangement had been made by the operators of the field and the balloon crew as to the point at which this pole was to be erected. It was disclosed that no method of marking it as an obstruction had been agreed upon.

Probable cause.—Pilot stalled the aircraft while attempting to avoid unmarked obstruction.

Contributing factor.—Erection of an unmarked obstruction at end of runway without a definite understanding between operator and balloon crew as to location and method of marking.

Plane Strikes Tree and Falls Into Lake

In an accident near Hamilton, Mont., on July 15, 1940, Robert Maricich was fatally injured and Delmont Clabaugh was seriously injured. Maricich held a commercial pilot's license with 1 Land, 2S and 3S Land, and Instrument ratings. Clabaugh was a cargo dropper for the United States Forest Service. The aircraft, a Travelair, S–6000–B, was demolished.

The pilot, accompanied by the cargo dropper, took off from Missoula, Mont., with a load of Forest Service rations to be dropped to fire fighters near Cub Point, Idaho. After arriving over the Cub Point Lookout Station, the pilot selected a small meadow, on a plateau located on the north side of a cliff, in which to drop the cargo. He descended below the level of the cliff to a very low altitude, entered a steep left bank, and signalled for the cargo dropper to drop a box of supplies. After one package had been successfully released, the aircraft, having lost some altitude, entered another similar turn, and when about halfway through it, struck a tree and fell into a shallow lake in the meadow.

During subsequent investigation, the cargo dropper stated that turbulent air was encountered near the cliff, which rises to a height of approximately 700 feet above the plateau which is at an elevation of about 6,900 feet. Southeast winds of approximately 20 m. p. h. prevailed at the time. The cargo dropper further stated that the engine sounded as though it were operating normally up to the time of the accident and that the aircraft, although in a steeply banked attitude, did not feel stalled, but seemed to slip to the left into the tree. There was no indication of malfunctioning of the controls or of structural failure, nor was the aircraft overloaded. The pilot

(*See* Accident Reports, *page 296*)

Priority Granted 7 Plants to Produce Aviation Gasoline

The granting of high priority ratings on seven new plants for production either of 100-octane aviation gasoline or of the base stock and blending agents used in the making of that fuel has been announced by the Office of Petroleum Coordinator for National Defense.

Bringing to a total of 15 the number of aviation gasoline plants now building or which may now be commenced, issuance of the ratings by the Office of Production Management on recommendation of the Coordinator's Office, practically eliminates a backlog of project applications which had accumulated in recent weeks.

Decks Cleared

While this action clears the decks for rapid consideration of plans to triple the Nation's 100-octane refining capacity, according to Petroleum Coordinator Harold L. Ickes, there is need for aggressive, immediate action on the part of the oil industry.

Making public the results of studies made in each of five coordinating districts, which together include the entire country, Coordinator Ickes said these placed the present refining ca-

(*See* GASOLINE, *page 295*)

Third Report Issued On Aircraft Flutter

The Civil Aeronautics Administration has issued a third report in its series on aircraft flutter. It is Engineering Section Report No. 24, PARALLEL AXES CONTROL-SURFACE BINARY FLUTTER, and supplements Aircraft Airworthiness Section Reports 22 and 23.

The present report is applicable to the determination of the flutter speeds for the following modes: Wing-torsion aileron, fuselage side-bending rudder, fuselage vertical-bending elevator, fin-torsion rudder, and stabilizer-torsion elevator.

The Aircraft Engineering Division has sponsored this study in order that the present regulations and manual material pertaining to flutter may be met more conveniently by aircraft manufacturers.

Comments and criticisms on the report have been requested of those receiving copies, as well as any data on amplitude measurements obtained during vibration tests, or other information that might be related to further work on this subject. Comments should be addressed to the Aircraft Engineering Division, Civil Aeronautics Administration, Washington, D. C. Copies of the report may be obtained from the Publications and Statistics Division, Civil Aeronautics Administration, Washington, D. C.

Photographic Measuring Devices Developed in 2 C. A. A. Projects

Equipment Used for Aircraft Certification

The Civil Aeronautics Administration is now working on two projects aimed at improving photographic measuring devices used in aviation. One concerns an automatic instrument log, and the other equipment for measuring aircraft performance.

The use of these devices, when developed and perfected, would eliminate the human element in the recording of important information about a plane's performance. A permanent record would be obtained automatically and the chances for controversy in interpreting this information would be reduced greatly.

An automatic instrument log, designed to take photographs of an airplane's instruments at regular intervals during flight, would assure accuracy and relieve the pilot of the task of keeping a written log. Air carriers are interested in this, and it has many uses in pilot training and testing.

The automatic instrument log has been used before in aircraft, but the new device is expected to be superior in many respects. The film, for instance, is several times faster than the film used in earlier developments. The use of an intensely brilliant stroboscopic type of light which flashes for an extremely short-time interval is expected to eliminate blurring caused by instrument vibration which was experienced when the use of filament lamps necessitated longer exposure times.

The equipment will consist of a small, lightweight camera unit, a timing device, and an illuminating unit. Operation will be automatic and continuous. The illumination unit will emit infrared light, to which the film will be sensitive. Since infra-red is below the visible range, this should not interfere with the pilot's vision.

The photographic equipment for measuring aircraft performance essentially comprises a camera field unit and a device for analyzing the photographic records obtained by that unit. The photographs are projected on a graduated screen for analysis.

Use of this equipment makes it possible to determine for each exposure the exact position of the airplane with respect to the camera in a horizontal and vertical direction. Since the intervals between exposures are precisely controlled through electrical means, a space-time record of the airplane's motion in a horizontal and vertical direction is obtained. From these records, the rate of climb and speed of the airplane may be determined.

In addition to obtaining a photograph of the airplane in flight, the camera also takes a photograph of a special

(*See* PHOTO DEVICES, *page 295*)

– Keep 'Em Flying –

New Type Approvals

(Approval numbers and dates of assignment in parenthesis)

Type Certificates

Propellers

U. S. Propellers, Inc., models 72F, 74F, and 76F; diameter 6 fe. 0 in. (model 72F), 6 ft. 2 in. (model 74F), 6 ft. 4 in. (model 76F); pitch 4 ft. 4 in. to 3 ft. 6 in.; 90 hp., 2,500 r. p. m. (772, 10–13–41.)

Appliances

Wollam plywood floats, model 1200. Maximum standard weight of airplane (American and Canadian requirements) 1,360 lbs. (143, 10–7–41.)

New Models Added to Old Type Approvals

(Approval numbers and dates of approval of new models in parenthesis)

Aircraft

Interstate, S–1A–65F, 2-place closed land monoplane. Engine, Franklin 4AC–176–B2. (Type Certificate No. 737, 10–1–41.)

Engines

Pratt & Whitney, Wasp Jr. T1B3, 9 cyl. radial air cooled. Rating: Maximum, except take-off, 450 hp., 2,300 r. p. m. at 1,500 ft. pressure altitude. Incorporates fully automatic valve gear lubrication. (Approved Type Certificate No. 123, 10–1–41.)

Kinner, R–55, 5 cyl. radial air cooled, 175 hp. at 2,100 r. p. m. at sea level pressure altitude. Incorporates No. 20 spline crankshaft. (Type Certificate No. 153, 10–9–41.)

Appliances

Shinn, low-pressure wheels, models 8C1YB, 8C2YB, 8C4YB, 8C1YBM, 8C2YMB, 8C4YBM, 8C1YFB, 8C2YFB, 8C4YFB, 8C1YFBM, 8C2YFBM, 8C4YFBM; 7.00–8. Approved static load per wheel 1,800 lbs. (Type Certificate No. 37, 9–22–41.)

Goodyear, low-pressure wheels, models L6MBM and L6HBM, 6.00–6. Approved static load per wheel 1,150 lbs. (Type Certificate No. 37, 9–22X41.)

Goodyear, low-pressure wheels, model L8HBM, 6.50–8. Approved static load per wheel 1,400 lbs. (Type Certificate No. 37, 10–13–41.)

Marquette Probe Closed by Board

The Civil Aeronautics Board has announced that in the interest of stabilizing air transportation in the Detroit-Cincinnati-St. Louis area, it has closed its investigation into the question of the citizenship of Marquette Airlines, Inc., instituted on February 20, 1940. Subsequent to that date, Transcontinental & Western Air, Inc., arranged to acquire, with the Board's approval, all of the stock of Marquette Airlines subject to the outcome of the investigation into the citizenship of Marquette during the "grandfather" period on which the validity of its certificate depended. Pursuant to authorization given by the Board, Transcontinental & Western Air has in the meantime been operating the services authorized by the Marquette certificate.

Although the Board has thus far been successful in the courts in Canada in establishing its right to secure through witnesses in Canada information it is believed they have and which it is believed would answer questions as to that citizenship, it has not yet been successful in obtaining that testimony. Further long procedural delays seem to be in prospect. The opinion points out that while the litigation in the Canadian courts continues, TWA now serving the points on Marquette's certificate can make no long-range plans for the development of air transportation in that area because of the contingent nature of its rights to acquire the Marquette stock; and that this uncertainty also affects other air carriers and the public at large.

The opinion states: "It is self-evident that where one of the large air carriers is prevented from taking maximum and immediate advantage of measures of economy and efficiency in operation, the public interest is not served and the objectives of the Civil Aeronautics Act of 1938 are not advanced." After balancing the desirability of clearing up remaining uncertainties in the certificate investigation proceeding against the public interest factors in favor of terminating further uncertainty and litigation, the majority say: "The balance of public interest lies, we think, on the side of closing the Marquette proceeding now, before further expense and effort is expended in the forthcoming struggle in the Supreme Court of Canada. We do not give our blessing to a doubtful past; but we clear the way for the growth and development of our air transportation system in the affected area which, in this case, we judge to be more important."

The opinion was concurred in by Branch, chairman, and Members Warner and Ryan. Members Mason and Baker dissented.

—Keep 'Em Flying—

Changes in C. A. R. Affecting Transport Planes Proposed

Proposed amendments to Parts 04, 40, and 61 of the Civil Air Regulations, covering certification and operation of transport category airplanes, are contained in Civil Air Regulations Draft Release No. 1, issued by the Civil Aeronautics Board.

Accompanying the draft is a memorandum which discusses the reasons for certain regulatory changes proposed and adds some alternative possibilities of regulatory action on lines not actually incorporated in the draft. Comment on the proposals and alternatives is requested.

The proposals represent a revision of Amendment No. 56 based on tests, studies, discussions and correspondence with interested members of the industry since the amendment went into effect about 18 months ago.

Prior to the adoption of Amendment No. 56, take-off and landing performance specified only ground run distance, rate the take-off ground run distance, rate of climb on all engines at sea level, and the landing contact speed. These criteria had been reasonably adequate for airplanes without high lift devices. However, with the advent of modern multiengined airplanes it became evident that determining the complete take-off and landing paths of the airplane under conditions simulating actual service operation, including possible engine failure on take-off, would be necessary to insure adequate uniform standards of safety at all places where air carrier operations might be conducted or proposed.

Amendment No. 56 was the first attempt in the Civil Air Regulations to cover these complex performance determinations. In the light of new material accumulated from tests and studies and conference, a general revision of the amendment was projected. Its various phases have been discussed with interested members of the industry during the past year.

Copies of Civil Air Regulations Draft Release No. 1 may be obtained from the Publications and Statistics Division, Civil Aeronautics Administration, Washington, D. C.

Statistical Summary

The average revenue-passenger load factor reported by domestic air carriers in September reached an all-time high of 68.11 percent, according to figures compiled by the Civil Aeronautics Administration.

All-time high records also were set in revenue passengers carried, revenue-passenger-miles flown, and express pound-miles flown, September air-carrier traffic statistics show.

In September of this year the reporting air lines carried 429,773 revenue passengers, a gain of 49.51 percent over the number carried in September of last year. The revenue-passenger-miles flown in September 1941 totaled 147,572,534, a 36.83 percent increase over the figure for September 1940. This year's total of express pound-miles flown in September was 1,025,556,323, an increase of 58.77 percent over the total flown in September of last year.

Board Issues Traffic Flow Survey

The Civil Aeronautics Board has issued a survey analyzing traffic flow along every inter-city segment of every scheduled air route in the Continental United States during the month of September 1940. The survey shows the relationships of such traffic to the schedules which were provided to serve it. Traffic is shown for all flights, classified by passengers, mail, and express. Data are also furnished on types of equipment, extra sections, timing of schedules, pound mileages for all types of traffic, and revenue plane mileages.

Data in the flow survey are concurrent with data in the Origination and Destination Airline Traffic Survey of September 1940. Thus the flow of traffic for any route or portion of route can be analyzed in terms of its origins and destinations.

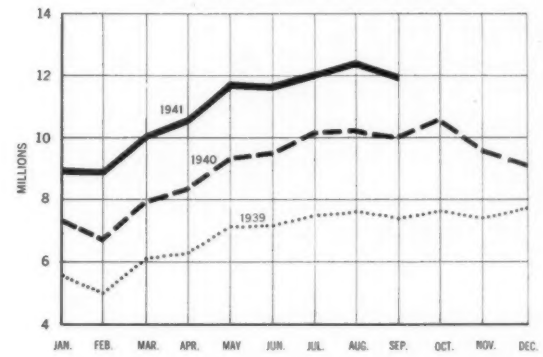
This survey report is generally similar in substance and form to a report issued by the Board on air traffic during the month of August 1939. However, the present report includes analyses of express traffic which was not covered in the August 1939 survey. The map section of the present report has been amplified to include considerable data not shown in the previous report.

The survey should provide valuable comparative data to the air transport industry for planning purposes and as bases for exhibit preparation in various regulatory proceedings.

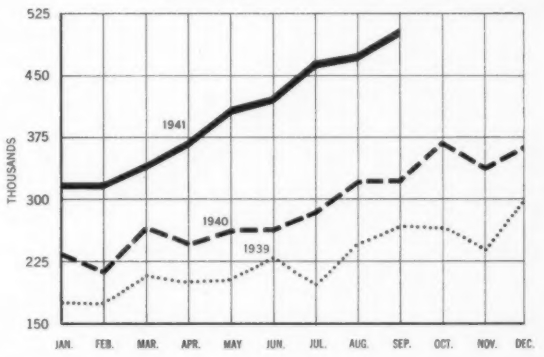
The survey consists of two large volumes which include largely statistical and tabular material. Requests for copies should be addressed to the Analyses Division, Civil Aeronautics Board, Washington, D. C.

Domestic Air Carrier Traffic Statistics for 1939, 1940, and the first 9 Months of 1941

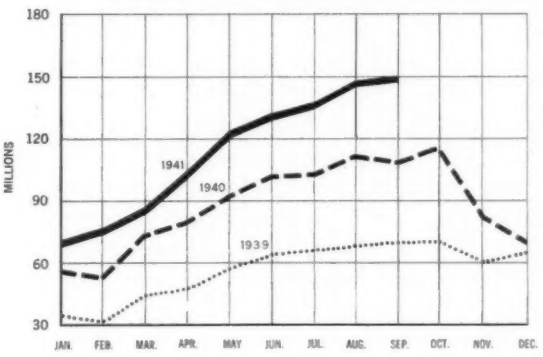
REVENUE MILES FLOWN



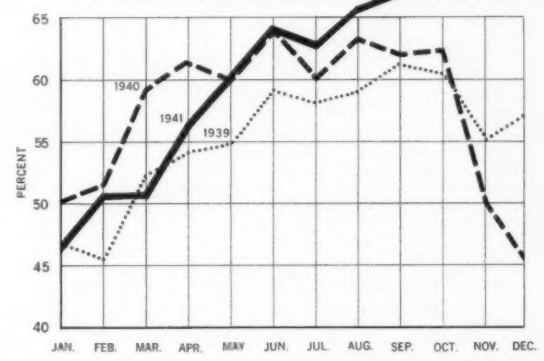
EXPRESS TON-MILES FLOWN



REVENUE PASSENGER-MILES FLOWN



REVENUE PASSENGER LOAD FACTOR



Domestic Air Carrier Traffic Statistics for September 1941

Operator	Revenue miles flown		Revenue passengers carried		Revenue passenger-miles flown		Express pound-miles flown		Revenue passenger load factor (percent)	
	September 1941	Percent change over 1940	September 1941	Percent change over 1940	September 1941	Percent change over 1940	September 1941	Percent change over 1940	September 1941	September 1940
All American Aviation, Inc	68,516		0		0		355,348			
American Airlines, Inc	2,974,260	18.64	133,593	43.07	43,706,533	36.66	263,455,497	49.53	78.87	70.22
Braniff Airways, Inc	526,485	29.53	15,546	40.46	4,992,589	47.05	25,022,729	62.85	52.28	45.20
Catalina Air Transport, Inc	17,700	6.24	4,003	10.15	120,090	10.15	420,780	10.56	69.81	66.68
Chicago & Southern Air Lines, Inc	203,268	6.93	6,608	47.63	2,334,303	42.35	9,822,736	40.86	57.09	45.38
Continental Air Lines, Inc	145,843	20.38	1,998	21.90	559,734	11.66	728,509	10.79	32.27	45.59
Delta Air Corporation	243,278	20.05	8,675	72.19	2,289,158	77.12	5,645,990	188.15	53.82	53.03
Eastern Air Lines, Inc	1,587,536	22.31	50,740	49.79	17,536,239	41.25	111,976,350	50.60	55.82	53.40
Inland Air Lines, Inc	117,897	25.90	1,189	−17.26	310,964	−17.65	527,502	4.72	26.38	40.32
Mid-Continent Airlines, Inc	180,710	31.48	3,901	49.81	978,788	35.18	1,884,511	61.57	46.46	41.61
National Airlines, Inc	108,462	10.25	2,238	45.04	596,590	71.96	1,211,296	52.53	43.84	52.13
Northeast Airlines, Inc	126,239	36.59	56,71	76.94	881,541	86.32	1,338,905	181.23	43.84	52.13
Northwest Airlines, Inc	562,861	6.79	17,791	23.31	6,926,152	18.49	43,063,878	73.50	62.32	55.79
Pennsylvania-Central Airlines Corporation	646,217	67.46	40,212	86.94	7,605,131	102.37	30,257,871	100.65	57.51	55.43
Transcontinental & Western Air, Inc	1,768,712	13.97	50,809	42.32	23,105,782	27.40	197,522,084	92.84	71.82	65.36
United Air Lines Transport Corporation	2,561,941	14.46	78,847	61.45	32,915,780	31.07	306,268,588	46.53	78.16	67.20
Western Air Lines, Inc	287,558	32.32	7,952	56.50	2,713,160	55.99	26,053,749	65.21	57.80	54.11
Total	12,127,483	20.26	429,773	49.51	147,572,534	36.83	1,025,556,323	58.77	68.11	62.06

Pan American's South Pacific Route Amended

In order to improve operating efficiency over Pan American Airways' South Pacific route between San Francisco, Calif., and Auckland, New Zealand, the Civil Aeronautics Board has amended the route to include Suva, British Crown Colony of Fiji, as an intermediate point. The additional service will also have some commercial advantage in providing an air transportation link between Suva and other points served on the route.

The Board stated in its order: "At the present time the applicant operates fortnightly service between Honolulu and Auckland, involving nonstop flights of 1,913 miles between Honolulu and Canton Island and 1,987 miles between Canton Island and Noumea. The inclusion of Suva as an intermediate point between Canton Island and Noumea would involve only about 100 additional statute miles and would afford a station about midway between these points. In order to provide an intermediate fueling point on the Canton Island-Honolulu segment of the route the applicant proposes to establish facilities on Palmyra Island, a naval reservation located midway between these points. Commercial operations to Palmyra Island are not contemplated.

"It appears from the record that the proposed stop would improve the applicant's operating efficiency by providing additional facilities for proper dispatch and control of flights, an additional rest period for the crew, improved meteorological forecasts, and a more favorable fuel reserve. In addition, rearrangement of schedules which would be made possible with the additional stops would enable the applicant to eliminate undesirable night landings at Canton Island and Noumea. By elimination of layovers now required at Auckland and Canton Island the proposed service can be established without any increase in the present elapsed time of a round-trip flight between San Francisco and Auckland."

The route is as follows: Between the terminal point San Francisco, Calif., the intermediate points Los Angeles, Calif., Honolulu, Hawaii, Canton Island, Suva, British Crown Colony of Fiji, and Noumea, New Caledonia, and the terminal point Auckland, New Zealand.

Recognized Dealers

The Coast and Geodetic Survey has announced the change in address of Air Associates, Inc., recognized dealer in aeronautical charts at 1100 Airway Drive, Grand Central Air Terminal, Glendale, Calif., to:

Air Associates, Inc., Airport and Century Boulevards, Los Angeles, Calif.

Table A.—*Air Carrier Operations Statistics for the Periods January–June 1941 and 1940*

Domestic

	January–June 1941	January–June 1940	Percent of increase over 1940
Revenue-miles flown	61, 689, 346	49, 021, 661	25. 84
Revenue passengers carried	1, 569, 608	1, 151, 458	36. 31
Revenue passenger-miles flown	587, 197, 446	453, 455, 729	29. 49
Express carried (pounds)	7, 804, 508	5, 204, 610	49. 95
Express pound-miles flown	4, 310, 824, 619	2, 948, 425, 961	46. 21
Available passenger seat-miles flown	1, 058, 706, 678	776, 594, 069	36. 33
Revenue passenger load factor (percent)	55. 46	58. 39	−5. 02

International and Territorial

Revenue-miles flown	7, 100, 463	4, 639, 357	53. 05
Revenue passengers carried	142, 935	110, 721	29. 09
Revenue passenger-miles flown	79, 459, 049	51, 744, 113	53. 56
Express carried (pounds)	956, 642	836, 809	14. 32
Express pound-miles flown	(1)	(1)	
Available passenger seat-miles flown	137, 171, 770	86, 627, 028	58. 35
Revenue passenger load factor (percent)	57. 93	59. 73	−3. 01

Domestic, International, and Territorial

Revenue-miles flown	68, 789, 809	53, 661, 018	28. 19
Revenue passengers carried	1, 712, 543	1, 262, 179	35. 68
Revenue passenger-miles flown	666, 656, 495	505, 199, 842	31. 96
Express carried (pounds)	8, 761, 150	6, 041, 419	45. 02
Express pound-miles flown	(1)	(1)	
Available passenger seat-miles flown	1, 195, 878, 448	863, 221, 097	38. 54
Revenue passenger load factor (percent)	55. 75	58. 52	−4. 73

[1] Not available.

Air Carriers

(*Continued from page 285*)

higher, but the percentage of increase in revenue miles flown was somewhat lower than for the three categories of air carriers combined. In the first 6 months of this year domestic airlines carried 1,569,608 revenue passengers, a 36.31-percent increase over the 1,151,458 passengers carried in the first 6 months of 1940. Domestic lines flew 61,689,346 revenue miles in the January–June period this year, a 25.84-percent increase over the 49,021,661 miles flown in the corresponding period of 1940.

As of June 30, 1941, the air carriers had in operation on all routes, including domestic, international, and territorial, a total of 460 aircraft, and had a total of 23,999 persons employed. Corresponding totals as of June 30, 1940, were 405 aircraft and 19,922 persons employed. The total personnel as of June 30 this year included 1,166 first pilots, 1,298 copilots, 203 dispatchers, 5,868 mechanics and riggers, 4,678 other hangar and field employes, 238 stewards, 842 stewardesses, 8,484 office employes, and 1,222 in all other classifications.

For the 6-month period of January–June 1941 the revenue hours flown by all reporting air carriers totaled 441,067, as against 354,770 in a similar period of 1940. The gasoline consumed in the first half of 1941 totaled 43,336,579 gallons, as against 33,220,246 gallons in the first half of 1940. The average journey of each passenger was 393 miles this year, as against 405 miles last year; and the average speed of transport planes was 156 miles per hour this year, as against 151 miles per hour last year.

The accompanying tables give full statistics on air-carrier operations in the following manner: Table A shows operations statistics for all air carriers, divided as to domestic, international, and territorial routes; table B shows domestic, international, and territorial air carrier operations by companies; and table C gives air carrier figures by months.

—Keep 'Em Flying—

Training Booklet

(*Continued from page 286*)

Federal agencies such as the Civilian Conservation Corps, National Youth Administration, and Work Projects Administration, and correspondence courses. Aeronautical engineering is discussed in regard to sponsored training and colleges.

Under employment, the subjects taken up are apprenticeship, up-grading, supervisors, Bureau of Employment Security, and Civil Service Commission.

The purpose of the booklet is to serve as a guide for those seeking training or employment of any type in the field of aeronautics. Wherever detailed information is not supplied concerning requirements and method of application, a source from which additional information may be obtained is given. It is expected that the information contained in the booklet will be revised from time to time as changes take place.

Table B.—*Air Carrier Operations Statistics for the Period January–June 1941*

Operator		Months operated	Revenue miles flown	Revenue passengers carried	Revenue passenger-miles flown	Express carried (pounds)	Express pound-miles flown	Revenue passenger load factor (percent)
	Domestic Routes Operated							
All American Aviation, Inc.	Pittsburgh to Huntington, Philadelphia, Williamsport, Jamestown, etc.	6	384,487	0	0	8,924	1,219,927	
American Airlines, Inc.	Dallas to Los Angeles	6	2,474,742	30,189	27,954,905	197,284	222,794,386	
	New York to Chicago	6	3,472,891	118,222	45,382,279	900,962	431,861,645	
	Boston to New York	6	1,614,980	139,932	23,989,575	358,637	57,525,909	
	Boston to Cleveland	6	321,318	20,351	3,030,453	54,837	6,894,481	
	Cleveland to Nashville	6	508,233	28,570	5,384,461	91,280	20,653,656	
	Albany to Fort Worth	6	4,301,020	108,953	47,012,852	389,828	291,521,871	
	Washington to Chicago	6	1,102,375	35,595	13,839,841	98,589	37,512,022	
	Chicago to Forth Worth	6	993,850	26,851	11,348,960	106,258	58,498,699	
	Buffalo to Toronto	2	3,742	229	17,563	586	44,921	
	Total		14,793,151	508,892	177,960,889	2,198,261	1,127,307,590	66.13
Braniff Airways, Inc.	Chicago to Dallas	6	940,482	16,862	8,258,781	84,950	54,766,051	
	Amarillo to Brownsville	6	1,358,550	41,337	9,818,415	103,580	30,570,054	
	Houston to San Antonio and Corpus Christi	6	256,637	6,995	1,314,331	11,149	2,081,753	
	Total		2,555,669	65,194	19,391,527	199,679	87,417,858	44.19
Catalina Air Transport	Wilmington to Avalon	6	62,200	12,809	384,270	82,417	2,472,510	61.09
Chicago & Southern Air Lines, Inc.	Chicago to New Orleans	6	941,528	22,994	8,823,644	95,202	47,199,107	
	Memphis to Houston	4	121,703	1,620	734,047	3,384	2,316,629	
	Total		1,063,231	24,614	9,557,691	98,586	49,515,736	44.95
Continental Air Lines, Inc.	Denver to El Paso	6	559,446	7,192	2,159,977	13,993	3,634,651	
	Pueblo to Wichita	6	129,393	1,173	412,273	2,020	675,931	
	Total		688,839	8,365	2,572,250	16,013	4,310,582	34.67
Delta Air Corporation	Charleston to Fort Worth	6	1,165,864	26,655	7,349,426	50,982	16,705,741	
	Atlanta to Cincinnati	3	119,121	3,210	870,120	4,377	1,250,310	
	Total		1,284,985	29,865	8,219,546	55,359	17,956,051	37.72
Eastern Air Lines, Inc.	New York to New Orleans	6	2,485,942	55,674	27,457,395	280,869	176,387,513	
	New York to Miami	6	4,450,057	110,799	51,422,445	417,233	325,388,459	
	Chicago to Jacksonville	6	1,338,271	41,227	15,945,331	144,062	65,862,737	
	New Orleans to Houston	6	429,858	11,091	3,704,500	48,355	16,151,137	
	Atlanta to Tampa; Tallahassee to Memphis	6	625,304	10,974	3,273,346	32,056	9,547,286	
	Houston to San Antonio and Brownsville	6	247,942	6,100	1,452,788	18,000	5,025,768	
	St. Louis to Nashville	6	126,677	3,305	763,363	3,775	821,499	
	Total		9,704,051	239,170	104,019,168	944,350	599,184,399	54.17
Inland Air Lines, Inc.	Cheyenne to Great Falls	6	368,484	3,816	1,031,124	6,943	1,892,375	
	Cheyenne to Huron	6	169,623	1,609	376,768	1,339	310,633	
	Total		538,107	5,425	1,407,892	8,282	2,203,008	26.16
Mid-Continent Airlines, Inc.	Minot, Minneapolis to Tulsa	6	824,152	12,608	3,149,033	31,291	7,528,066	
	Minneapolis to St. Louis; Des Moines to Kansas City.	6	252,120	2,687	808,689	3,539	692,954	
	Total		1,076,272	15,295	3,957,722	34,830	8,221,020	33.14
National Airlines, Inc.	Jacksonville to Miami	6	454,489	11,988	2,327,454	27,140	5,708,459	
	Jacksonville to New Orleans	6	367,200	7,163	2,440,781	9,918	4,378,948	
	Total		821,689	19,151	4,768,235	37,058	10,087,407	45.46
Northeast Airlines, Inc.	Boston to Caribou	6	174,566	5,790	821,679	13,328	1,975,610	
	Boston to Montreal	6	172,095	4,384	748,938	8,405	1,023,461	
	Boston to Moncton	6	236,182	4,385	803,156	7,024	1,226,313	
	Total		582,843	14,559	2,373,773	28,757	4,225,384	40.49
Northwest Airlines, Inc.	Chicago to Seattle	6	2,862,387	59,646	24,578,585	285,424	167,723,231	
	Minneapolis to Duluth	6	85,041	1,952	279,643	4,967	715,518	
	Total		2,947,428	61,598	24,858,228	290,391	168,438,749	41.—
Pennsylvania-Central Airlines Corp.	Norfolk to Detroit	6	1,376,216	88,871	17,026,855	437,787	79,735,696	
	Detroit to Milwaukee	6	445,192	25,690	3,877,732	83,687	13,268,411	
	Washington to Buffalo	6	119,307	2,314	579,755	18,220	2,330,870	
	Pittsburgh to Buffalo	6	140,603	4,141	828,714	11,880	2,308,674	
	Pittsburgh to Baltimore	5	28,243	1,639	311,110	4,694	660,202	
	Detroit to Sault Ste. Marie	6	129,158	2,778	514,764	9,373	935,486	
	Norfolk to Knoxville	6	193,775	2,564	545,700	2,341	318,253	
	Pittsburgh to Birmingham	5	317,011	4,980	1,478,302	7,625	2,818,494	
	Total		2,749,505	132,977	25,162,932	575,607	102,376,086	47.29
Transcontinental & Western Air, Inc.	New York to Los Angeles	6	5,779,558	109,528	54,099,941	713,159	496,311,585	
	Dayton to Chicago	6	263,614	8,526	1,944,273	61,358	14,439,265	
	Las Vegas to San Francisco	6	164,391	1,886	729,232	5,223	2,238,404	
	Phoenix to Las Vegas	6	94,638	2,284	422,905	4,235	276,252	
	Kansas City to New York	6	2,505,901	44,215	24,842,103	280,643	180,664,991	
	St. Louis to Detroit	6	437,846	14,422	2,729,875	50,392	8,123,882	
	Total		9,245,948	180,861	84,768,329	1,115,010	702,054,379	54.04

Table B.—*Air Carrier Operations Statistic for January–June 1941 (Continued)*

Operator		Months operated	Revenue miles flown	Revenue passengers carried	Revenue passenger-miles flown	Express carried (pounds)	Express pound-miles flown	Revenue passenger load factor (percent)
	Domestic Routes Operated							
United Air Lines Transport Corp.	New York to Oakland	6	7,892,797	110,813	69,641,975	1,202,908	1,088,964,576	
	Seattle to San Diego	6	2,939,005	91,507	32,486,236	453,594	176,665,554	
	Salt Lake City to Seattle	6	765,676	15,276	6,024,320	55,447	32,442,272	
	Cheyenne to Denver	6	111,034	3,563	349,274	12,632	1,237,936	
	Seattle to Vancouver	2	51,220	1,285	167,050	7,963	1,037,669	
	Total		11,759,732	222,444	108,668,855	1,732,544	1,300,347,998	60.96
Western Air Lines, Inc.	San Diego to Salt Lake City	6	1,051,728	22,555	7,628,431	363,249	119,583,195	
	Salt Lake City to Great Falls	6	371,047	5,655	1,476,392	15,148	3,895,718	
	Great Falls to Lethbridge	1	8,434	179	21,316	43	7,022	
	Total		1,431,209	28,389	9,126,139	378,440	123,485,935	42.83
	Total domestic routes		61,689,346	1,569,608	587,197,446	7,804,508	4,310,824,619	55.46
	International and Territorial							
Canadian Colonial Airways, Inc.[1]	New York to Montreal	6	326,215	12,447	3,601,755	13,276	3,852,477	52.63
Inter-Island Airways, Inc.	Honolulu to Hilo	6	253,557	16,399	2,398,012	53,838	9,275,289	
	Honolulu to Port Allen	6	48,480	3,781	453,720	14,668	1,760,160	
	Total		302,037	20,180	2,851,732	68,506	11,035,449	67.21
Pan American Airways, Inc.[2]	New York to Lisbon	6	554,662	3,860	8,849,566	2,677	[3]	
	New York to Bermuda	6						
	San Francisco to Hong Kong-Singapore	6	670,368	2,189	9,116,006	75,254	[3]	
	San Francisco-Los Angeles to Auckland, N. Z.	6						
	Seattle to Juneau via Ketchikan	6						
	Juneau to Fairbanks	6	480,996	2,366	1,850,934	18,001	[3]	
	Fairbanks to Nome	6						
	Fairbanks to Bethel	6						
	Miami to Nassau	6						
	Miami to Havana	6						
	Miami to Barranquilla	6						
	Miami to Cristobal via Barranquilla	6						
	Miami to Cristobal via Kingston	6						
	Miami to Merida	6						
	Miami to Rio de Janeiro	6						
	Para to Rio de Janeiro via Barreiras	6						
	Rio de Janeiro to Buenos Aires via Asuncion	6	3,747,922	90,039	43,493,249	649,659	[3]	
	Rio de Janeiro to Buenos Aires via Porto Alegre	6						
	Kingston to Port au Prince	6						
	Port au Prince to Maracaibo	6						
	San Juan to Port of Spain (direct)	6						
	Brownsville to Cristobal	6						
	Cristobal to Port of Spain	6						
	Cristobal to Medellin	6						
	Cristobal to Balboa	6						
	Total		5,453,948	98,454	63,309,755	745,591	[3]	63.27
Pan American-Grace Airways, Inc.	Cristobal, Canal Zone, to Buenos Aires via Santiago, Chile, and Bolivia.	6	1,018,263	11,854	9,695,807	129,269	[3]	37.25
	Total international and Territorial routes		7,100,463	142,935	79,459,049	956,642	[3]	57.93
	Grand total		68,789,809	1,712,543	666,656,495	8,761,150	[3]	55.75

[1] Does not include the operations of Canadian Colonial Airways, Ltd.
[2] Does not include the operations of Cia Mexicana de Aviacion, S. A., Cia National Cubana de Aviacion and Panair do Brasil.
[3] Not available.

Take-Offs

(*Continued from page 287*)

due to powerplant difficulties unless he locates and eliminates the cause or is positive that the repetition of the condition leading to the failure can be corrected through operating technique.

Engine cutting out due to excessive cooling or loading up during a prolonged glide can be avoided by the proper handling of the throttle. The pilot should not attempt a take-off after a forced landing attributed to icing or wet ignition until the weather conditions have changed or unless it is definite that the ice was allowed to form due to the application of insufficient or no heat. The latter, being due to poor pilot technique and judgment, can be corrected by the proper application of heat, and a second take-off may be made.

The so-called "temporary" interruption in fuel supply may not reappear during the ground run-up, but changes in aircraft position may send the sediment, dirt, etc., back into a position in the fuel system to cause a second interruption. A chafed ignition wire can give all the symptoms of an interruption in fuel supply, causing a complete powerplant failure, and yet may not reappear when the engine is again started and warmed up. Here again, vibration and changes in the attitude of the aircraft may cause a repetition of this failure subsequent to take-off. Often the so-called "temporary" interruption turns out to be a chronic interruption unless the cause is located and removed.

Do not take-off if the exact cause of the failure cannot be located and eliminated. Remember—mechanical breakdowns, fuel system clogging, etc., do not disappear of their own accord—this is one time that the pilot should remove the cause of trouble rather than try to avoid or ignore it by guessing. If in doubt of your ability to analyze properly the failure and locate the cause after a forced landing, it is imperative that you obtain the services of a competent engine mechanic. This may necessitate *walking back*, but in the interest of your safety and the promotion of safe flying it is far better than being *carried back*.

Table C.—*Air Carrier Operations Statistics, by Months, for the Period January–June 1941, Divided as to Domestic, International, and Territorial Operations*

	January	February	March	April	May	June	Total
Number of operating carriers:							
Domestic	17	17	17	17	17	17	
International and Territorial	4	4	4	4	4	4	
Total	21	21	21	21	21	21	
Revenue-miles flown:							
Domestic	8,946,038	8,842,795	10,017,862	10,606,486	11,738,282	11,537,883	61,689,346
International and Territorial	1,091,576	1,022,128	1,239,440	1,259,548	1,250,347	1,237,424	7,100,463
Total	10,037,614	9,864,923	11,257,302	11,866,034	12,988,629	12,775,307	68,789,809
Revenue passengers carried:							
Domestic	177,055	196,924	221,601	282,522	338,028	353,478	1,569,608
International and Territorial	21,658	25,005	27,667	23,648	21,277	23,680	142,935
Total	198,713	221,929	249,268	306,170	359,305	377,158	1,712,543
Revenue passenger-miles flown:							
Domestic	69,047,939	75,168,393	85,899,182	103,511,893	122,809,564	130,760,475	587,197,446
International and Territorial	10,912,805	11,965,873	14,377,126	13,974,550	13,971,184	14,257,511	79,459,049
Total	79,960,744	87,134,266	100,276,308	117,486,443	136,780,748	145,017,986	666,656,495
Express carried (pounds):							
Domestic	1,116,025	1,110,098	1,215,671	1,353,437	1,464,029	1,545,248	7,804,508
International and Territorial	126,406	116,472	166,078	166,444	188,697	192,545	956,642
Total	1,242,431	1,226,570	1,381,749	1,519,881	1,652,726	1,737,793	8,761,150
Express pound-miles flown:							
Domestic	627,817,532	628,747,661	674,701,593	726,329,909	814,748,028	838,479,896	4,310,824,619
International and Territorial	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Total	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Available passenger seat-miles flown:							
Domestic	148,445,817	148,429,377	169,011,421	182,907,502	206,182,259	203,730,302	1,058,706,678
International and Territorial	18,952,836	18,594,738	22,204,710	22,352,662	33,182,274	21,884,550	137,171,770
Total	167,398,653	167,024,115	191,216,131	205,260,164	239,364,533	225,614,852	1,195,878,448
Revenue passenger load factor (percent):							
Domestic	46.51	50.64	50.82	56.59	59.56	64.18	55.46
International and Territorial	57.58	64.35	64.75	62.52	42.10	65.15	57.93
Total	47.77	52.17	52.44	57.24	57.14	64.28	55.75

[1] Not available.

Gasoline

(*Continued from page 289*)

pacity for high-test aviation gasoline at 43,278 barrels daily. Plants now nearing completion will add 2,557 barrels by January 1, 1942, while others for which financing and other arrangements have been made will add another 11,994 barrels and make the over-all total production only 57,829 barrels by January 1, 1943.

Materials Important

Prospects for raising the January 1, 1943, output to the minimum goal of 100,000 barrels depend, Coordinator Ickes said, on the willingness and ability of refiners to provide the additional facilities shown by the survey to be possible of construction. Most of the plants can be built, the survey showed, if the companies can arrange for the necessary raw materials and are willing to undertake the task.

According to the Coordinator's recapitulation of figures furnished by industry subcommittees, these show a possible additional capacity by 1943 of 41,688 barrels. This would make the national output 99,517 barrels, with the possibility that 3,000 barrels additional could be gained through the improvement of base stocks used in the manufacture of aviation fuel.

Plants Given Priority

A list of the plants on which O. P. M. has granted priority ratings, and which will fit into the program for tripling capacity, follows:

Union Oil Co., Wilmington, Calif., Isopentane; Shell Oil Co., Wilmington, Calif., Isopentane; Shell Oil Co., Houston, Tex., Hydrocodimer; LaGloria Corporation, Corpus Christi, Tex., Isobutane; Shell Oil Co., Wood River, Ill., Isopentane; Phillips Petroleum, Borger, Tex., 100-octane; Gulf Refining Co., Port Arthur, Tex., Base Stock.

(Isopentanes and hydrocodimers are blending agents. Isobutane is one of the raw materials from which blending agents are produced.)

In addition to the seven facilities listed above, the Office of Production Management also issued priorities to the Shell Development Co. for erection of a pilot testing plant at Emoryville, Calif.

Aviation gasoline plants already building for which project ratings had been released earlier or for which materials were obtained without preference rating follow:

Shell Oil Co., Norco, La.; Standard Oil Co., Toledo, Ohio; Standard Oil Co., Whiting, Ind.; Texas Co., Port Arthur, Tex.; Gulf Refining Co., Port Arthur, Tex.; Standard Oil Co., El Segundo, Calif.; Tidewater Associated Oil Co., Avon, Calif., and Humble Oil & Refining Co., Baytown, Tex.

Photo Devices

(*Continued from page 289*)

instrument panel. On the panel are instruments to indicate the speed and direction of the wind, a stop watch, and an exposure counter. The wind recording instruments are connected with an anemometer-weathervane arrangement located near the flight path.

At present the equipment's use is limited to the landing and taking off of planes. In time it may be applied to speed tests. The present procedure in speed tests is for electric timers to clock the plane at the beginning and end of a measured course. This, however, does not furnish information about the operation of the airplane as it is flown over the course. Is its speed constant? Does it fly a straight course? These and many other important questions can be answered by a photographic flight record.

Accident Reports

(*Continued from page 288*)

was familiar with the terrain and was experienced in cargo-dropping.

Probable Cause.—Failure of pilot to observe and avoid a tree while making a steep turn at an extremely low altitude.

Contributing Factor.—Turbulent air.

Stalls During Landing Approach

On March 1, 1941, near the Oxford Airport, Oxford, Mich., Pilot Harry R. Drab and his passenger, Trevis L. Schultz, were seriously injured. The pilot held a private certificate with a class 1 Land Rating and had logged about 37 solo flying hours. The aircraft, a Waco, Model GXE, was demolished.

The pilot made three local, solo practice flights, from the Oxford Airport. On the next flight, made for the purpose of practicing landings, the pilot was accompanied by the nonrevenue passenger, a personal friend. Mr. Drab took off toward the northwest and made a left circuit of the airport. As the aircraft was making a left turn at an altitude between 50 and 100 feet, in order to approach the southeast corner of the airport for a landing, it stalled and fell to the ground, nose first.

Subsequent investigation did not disclose any evidence of failure of the control system or structure. The pilot stated that the engine had performed normally during the subject flight and during the previous flights. There was no lack of fuel. The dual controls were not connected. The pilot's previous experience had been almost entirely in class 1 Land aircraft, while the subject plane is a class 2S aircraft.

Probable Cause.—Stall during landing approach.

Contributing Factor.—Inexperience of the pilot with subject type aircraft.

Stall During Low Altitude Turn

Arno H. Kunath and William Zimmerman were fatally injured in an accident on August 15, 1940, near Round Lake, Ill. The aircraft, a Piper J3L, powered by a Lycoming O–145–A2 engine, received major damage. Kunath held a commercial pilot certificate with 2S land and instructor ratings. He had accumulated 3,500 hours solo flight time, including 300 hours flown in the 90 days preceding the accident.

Pilot Kunath and his passenger, Zimmerman, had landed earlier that morning in a 20-acre field about 3 miles east of Round Lake. Shortly thereafter they taxied to the extreme west end of the field and took off toward the east into the light wind which then prevailed. The aircraft cleared the power line bordering the east end of the field, climbing sluggishly as it continued east a short distance. A 180-degree turn was then made. The aircraft returned along the north side of the field from which it had taken off. Near the west end of the field, while flying at an altitude of about 100 feet, the pilot attempted a left turn. The airplane stalled during the turn and fell off to the ground on its nose.

Subsequent investigation disclosed that the airplane was equipped with fully functioning dual controls. No evidence was discovered which would indicate that either structural or control system failure occurred during flight. Witnesses state that the engine sounded as though it were functioning normally during the flight.

Probable Cause—Pilot stalled the airplane during a turn at low altitude.

Board Makes Public Report on 1940 Ground Accidents

Survey Also Included Hints for Prevention

The Civil Aeronautics Board has made public a survey of ground accidents occurring to nonair carrier aircraft in 1940 with hints for their prevention. The report, in part, is reprinted here. Copies of the complete report can be obtained from the Publications and Statistics Division, Civil Aeronautics Administration, Washington, D. C.

A Survey of Ground Accidents Occurring to Non-Air-Carrier Aircraft in 1940

Ground accidents are those accidents which occur while the airplane is not in flight. They include the multitude of damaging incidents which occur while an aircraft is being serviced, repaired, taxied, or towed about the airport, while it is parked, staked down, or in the hangar, or while the engine is being started.

Out of the 543 aircraft, excluding those involved in propeller accidents, which were damaged in the 441 ground accidents covered by this survey, two-thirds were washouts or required overhaul or replacement of a major assembly, such as a wing, undercarriage, or a fuselage.

The direct financial loss in these cases was tremendous. To this must be added a very substantial indirect financial loss, due to loss of use of equipment. Great as these losses may have been in 1940, they probably will be greater in 1941 because of the difficulty in securing material for repairs, which will cause further delay in returning equipment to use. From an economical standpoint, it is daily becoming more and more important to avoid accidents which cause damage to material and which render equipment unfit for use.

Furthermore, during these days of national emergency, it is a patriotic duty to conserve material and to keep airplanes flying by avoiding accidents especially accidents such as these which can be prevented so easily by a little forethought, care, and caution.

In 1940, a total of 441 ground accidents in non-air-carrier operation were reported to the Safety Bureau. These involved 564 aircraft (including 21 propeller accidents) of which 93 were washed out, 64 required overhaul, 202 required major assembly repair, and 184 received minor damage, but, except for the propeller accidents, they did not result in serious injury. Propeller accidents accounted for three fatalities and nine serious injuries. The following table shows how these accidents are divided among the various causes:

Ground Accidents

Kind of accident	Number of accidents	Number of aircraft involved	Damage			
			Washout	Overhaul	Major assembly	Minor
Strong or gusty wind	177	216	15	39	102	60
Fire	59	104	77	11	13	3
Taxying	70	97	----	4	28	65
Incompetent person at controls	58	69	1	18	42	18
Aircraft damaged by autos, hangar doors, etc.	19	19	----	----	5	14
Miscellaneous [1]	38	38	----	2	12	24
Subtotal	421	543	93	64	202	184
			Injury			
			Fatal	Serious	Minor	None
Propeller ground accidents	[2] 20	[3] 21	3	9	7	1
Total	441	564	----	----	----	----

[1] For example:
Wings damaged by repeated use of wing walk for resting sacks of rice. Aircraft used for rice plantings.
Defective valve released pressure in aerol landing gear strut allowing wing to drop.
Pontoon of seaplane struck submerged rock during launching. Ship sank.
Plane staked down, tail to wind; heavy coating of ice formed on trailing edges, weight of which caused lift struts to fail.

[2] Includes 4 accidents involving 5 aircraft in which incompetent persons were at the controls.

[3] Includes one blimp.

CIVIL AERONAUTICS BOARD

OFFICIAL ACTIONS

Abstracts of Opinions, Orders, and Regulations

FOR THE PERIOD OCTOBER 15–31, 1941

ORDERS

ORDER No. 1316.....*October 16, 1941*

Amended order, Serial No. 594, exempting Pan American Airways, Inc., from certain provisions of the Civil Aeronautics Act, by striking the words "to and from Parnahyba (Piauhy) Brazil" wherever they appear in said order.

ORDER No. 1317.....*October 16, 1941*

Granted the applications of Transcontinental & Western Air, Inc. and United Air Lines Transport Corporation for amendments to certificates of public convenience and necessity for routes Nos. 36 and 1, respectively, to include South Bend, Ind., as an intermediate point. (Opinion and order—Docket No. 464.)

ORDER No. 1318.....*October 18, 1941*

Granted United Air Lines Transport Corporation permission to intervene in the applications of American Airlines, Inc., Transcontinental & Western Air, Inc., and Western Air Lines, Inc., for certificates of public convenience and necessity and amendments of existing certificates.

ORDER No. 1319.....*October 16, 1941*

Granted application of Pan American Airways, Inc., for an amendment of its certificate of public convenience and necessity authorizing service between San Francisco, Calif., and Auckland, New Zealand, to include Suva, British Crown Colony of Fiji, as an intermediate point. (Opinion and order—Docket No. 656.)

ORDER No. 1320.....*October 20, 1941*

Adopted a supplemental order, amending order, Serial No. 406, fixing and determining the fair and reasonable rate of compensation for the transportation of mail by Northeast Airlines, Inc., over route No. 27. (Opinion and order—Docket No. 219.)

ORDER No. 1321.....*October 21, 1941*

Suspended for 120 days from October 26, student pilot certificate No. 174389, held by Charles B. Dulgerian, Monroe, N. Y., for piloting an aircraft carrying a passenger for hire in violation of the Civil Air Regulations.

ORDER No. 1322.....*October 21, 1941*

Suspended for 90 days from August 22, private pilot certificate No. 61718, held by Welcome W. Bender, Jr., Towson, Md., for piloting an aircraft within the airspace reservation in the city of Washington, D. C., in violation of the Civil Air Regulations.

ORDER No. 1323.....*October 21, 1941*

Suspended for 90 days from September 15, student pilot certificate No. S–104197, held by Stanley R. Hoff, Washington, D. C., for piloting an aircraft within an airspace reservation in the city of Washington, D. C., in violation of the Civil Air Regulations.

ORDER No. 1324.....*October 21, 1941*

Suspended for 90 days from September 9, private pilot certificate No. 31601, held by Alfred Jorgensen, Brooklyn, N. Y., for piloting an aircraft within an airspace reservation in the city of Washington, D. C., in violation of the Civil Air Regulations.

ORDER No. 1325.....*October 21, 1941*

Dismissed the complaint filed by the Administrator against Raymond Paul Betzoldt, holder of private pilot certificate No. 101650, for falsifying entries in his log book as to solo flight time and other violations of the Civil Air Regulations, by reason of the fact that he had already been deprived of his pilot certificate for approximately 120 days (opinion and order).

ORDER No. 1326.....*October 21, 1941*

Approved an agreement (Contract C. A. B. No. 203) between American Airlines, Inc., and Trans-Canada Air Lines, Ltd., relating to the furnishing of services and facilities at New York, Toronto, and Windsor.

ORDER No. 1327.....*October 21, 1941*

Suspended for 10 days commercial pilot certificate No. 14498, held by Richard W. Miller, Anchorage, Alaska, for failure to keep a record of his flight time in a log book, in violation of the Civil Air Regulations.

ORDER No. 1328.....*October 17, 1941*

Directed the commissioners appointed to take depositions of Canadian citizens in the matter of the application of Marquette Airlines, Inc. (order, Serial No. 443), to take any and all steps necessary to terminate the proceeding in Canada.

ORDER No. 1329.....*October 23, 1941*

Denied the applications of Uraba, Medellin & Central Airways, Inc., Pan American Airways, Inc., and Pan American-Grace Airways, Inc., for authorization to furnish certain free foreign air transportation.

ORDER No. 1330.....*October 24, 1941*

Dismissed the order of the Board (order, Serial No. 931) directing Clarence A. Conroy, Youngstown, Ohio, to appear before an examiner of the board and show cause why his commercial pilot certificate No. 38754 should not be suspended or revoked.

ORDER No. 1331.....*October 24, 1941*

Granted the petition of the city of Savannah, Ga., to intervene in the applications of Canadian Colonial Airways, Inc., Eastern Air Lines, Inc., National Airlines, inc., Pennsylvania-Central Airlines Corporation, and Seaboard Airways, Inc., for certificates of public convenience and necessity and amendment of certificates.

ORDER No. 1332.....*October 24, 1941*

Granted the petition of the city of Tampa, Fla., to intervene in proceeding outlined in order, Serial No. 1331.

ORDER No. 1333.....*October 24, 1941*

Instituted a proceeding to determine whether the public convenience and necessity require air transportation to and from San Antonio, Tex., and consolidated it, for the purpose of hearing, with the application of American Air lines, Inc., for a certificate of public convenience and necessity and the petitions of the cities of Laredo and Eagle Pass, Tex., for air transportation service.

ORDER No. 1334.....*October 25, 1941*

Granted the petition of the city of Atlanta, Ga., and Fulton County, Ga., for permission to intervene in the proceeding outlined in order, Serial No. 1331.

ORDER No. 1335.....*October 25, 1941*

Granted the petition of State Airlines, Inc., to intervene in the proceeding outlined in order, Serial No. 1331.

ORDER No. 1336——*October 25, 1941*

Granted American Airlines, Inc., permission to inaugurate nonstop service between Niagara Falls, N. Y., and Detroit, Mich., points on route No. 7; and between (1) New York, N. Y., and New Haven, Conn., (2) New Haven, Conn., and Providence, R. I., (3) Bridgeport, Conn., and Hartford, Conn., points on route 18, on November 1, 1941.

ORDER No. 1337——*October 28, 1941*

Suspended for 90 days private pilot certificate No. 5515–40, held by Sidney Pollock, Pottstown, Pa., for piloting an aircraft within an airspace reservation in the city of Washington, D. C., in violation of the Civil Air Regulations.

ORDER No. 1338——*October 28, 1941*

Suspended for 60 days student pilot certificate No. S–303104, held by James F. Holmes, Atlanta, Ga., for piloting an aircraft solo on a civil airway when his competency to do so had not been certified to by his instructor, in violation of the Civil Air Regulations (opinion and order).

ORDER No. 1339——*October 28, 1941*

Revoked student pilot certificate No. S–83768, held by William Hatch, Huntington, W. Va., for piloting an aircraft carrying a passenger other than a certificated instructor, and other violations of the Civil Air Regulations.

ORDER No. 1340——*October 28, 1941*

Suspended for a period of 90 days student pilot certificate No. S–225963, held by Walter James Kudlack, Grand Rapids, Mich., for taking off in an aircraft when there was risk of collision with another aircraft during such takeoff in violation of the Civil Air Regulations.

ORDER No. 1341——*October 28, 1941*

Ordered Lucien F. Davis, holder of commercial pilot certificate No. 2118–40, to take a written examination and demonstrate thereby his thorough familiarity with parts 01, 18, 20, and 60 of the Civil Air Regulations within 30 days (opinion and order).

ORDER No. 1342——*October 29, 1941*

Granted Continental Air Lines, Inc., permission to inaugurate nonstop service between Pueblo, Colo., and Albuquerque, N. Mex., points on route No. 29, on November 1, 1941.

ORDER No. 1343——*October 29, 1941*

Granted United Air Lines Transport Corporation permission to inaugurate nonstop service between Cheyenne, Wyo., and Boise, Idaho, points on route No. 1, on November 1, 1941.

ORDER No. 1344——*October 29, 1941*

Granted Transcontinental & Western Air, Inc., permission to inaugurate nonstop service between Kansas City, Mo., and Amarillo, Tex., points on route No. 2, on November 1, 1941.

ORDER No. 1345——*October 31, 1941*

Revoked private pilot certificate No. S9889–41, held by Robert Bradford Parker, Memphis, Tenn., for piloting an aircraft carrying a passenger who occupied a control seat when the dual controls had not been made inoperative, in violation of the Civil Air Regulations.

Opinion Available

Opinion No. 32 of the Civil Aeronautics Board is now available in printed form. It has been assigned Docket No. 162 and is entitled DELTA AIR CORPORATION *Et Al*—CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY. Copies may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D. C., for 10 cents each. When ordering include opinion serial number, docket number, and title. Notice will be carried in the Civil Aeronautics Journal as additional opinions are made available in printed form.

ORDER No. 1346——*October 31, 1941*

Suspended for 6 months student-pilot certificate No. 95579, held by Victor Alfred Kelley, Twin Falls, Idaho, for piloting an aircraft carrying a passenger other than a certificated instructor and other violations of the Civil Air Regulations.

ORDER No. 1347——*October 31, 1941*

Granted the city of Charlotte, N. C., permission to intervene in the proceeding outlined in order, Serial No. 1331.

ORDER No. 1348——*October 31, 1941*

Amended Order Serial No. 1022 as amended, so as to authorize Pennsylvania-Central Airlines Corp. to suspend service at Saginaw-Bay City, Mich., for a period beginning on Oct. 31, 1941, and continuing until such time as the airport is approved for use with Douglas DC–3 aircraft.

ORDER No. 1349——*October 31, 1941*

Granted the City of Raleigh, N. C., permission to intervene in the proceeding outlined in order, Serial No. 1331.

ORDER No. 1350——*October 31, 1941*

Granted United Air Lines Transport Corporation permission to inaugurate nonstop service between (1) San Francisco, Calif., and Elko, Nev., and (2) Elko, Nev., and Cheyenne, Wyo., points on route No. 1, on November 1, 1941.

ORDER No. 1351——*October 28, 1941*

Suspended for 10 days private pilot certificate No. 47215–40, held by Albert Lindemuth, Fairbanks, Alaska, for piloting an aircraft carrying passengers in furtherance of a business in violation of the Civil Air Regulations.

ORDER No. 1352——*October 31, 1941*

Granted the application of Eastern Air Lines, Inc., for amendment of its certificates of public convenience and necessity for routes Nos. 5 and 6, so as to include Atlantic City, N. J., as an intermediate point on each route; denied the applications of Pennsylvania-Central Airlines Corporation and Transcontinental & Western Air, Inc. (Opinion and order—Docket Nos. 243, 412, 420).

REGULATIONS

The Civil Aeronautics Board is now issuing amendments of the Civil Air Regulations in a new form that will enable them to be interleaved easily in the existing Regulations. The new pages are colored blue and each amendment is printed separately. The numbering of amendments has been revised so that no amendment will affect more than one part of the Regulations.

In addition to the Status of Parts of the Civil Air Regulations published monthly in the CIVIL AERONAUTICS JOURNAL, the Board will issue at intervals summarized lists of amendments, serving as up-to-date tables of contents for the Regulations as amended. Such lists will be distributed to the industry in the same way that individual amendments are. Following is the first of these lists, showing the new system of numbering:

Civil Air Regulations Status, October 14, 1941

(At close of Business)

Part 01. Revised September 30, 1941, effective November 1, 1941.
Part 02. Printed March 1, 1941.
Part 03. Canceled by paragraph 1, Amendment No. 7, adopted March 17, 1939.
Part 04. Printed April 1, 1941.
04–1. Amendment No. 116, adopted June 6, 1941.
04–2. Amendment No. 129, adopted September 5, 1941.
Part 05 to 12. Unassigned.
Part 13. Printed August 1, 1941.
Part 14. Printed November 15, 1940.
Part 15. Printed November 15, 1940.
Part 16. Printed February 13, 1941.
Part 17. Unassigned.
Part 18. Printed June 1, 1941.
Part 19. Unassigned.
Part 20. Printed May 1, 1940.
20–1. Amendment No. 54, adopted May 28, 1940.
20–2. Amendment No. 63, adopted July 23 1940.
20–3. Amendment No. 65, adopted July 30, 1940.
20–4. Amendment No. 67, adopted August 20, 1940.
20–5. Amendment No. 75, adopted October 4, 1940.
20–6. Amendment No. 82, adopted November 29, 1940.
20–7. Amendment No. 83, adopted December 13, 1940.
20–8. Amendment No. 87, adopted December 20, 1940.
20–9. Amendment No. 88, adopted December 27, 1940.
20–10. Amendment No. 99, adopted February 21, 1941.
20–11. Amendment No. 101, adopted February 25, 1941.
20–12. Amendment No. 107, adopted April 19, 1941.
20–13. Amendment No. 110, adopted May 23, 1941.

20–14. Amendment No. 111, adopted May 27, 1941.
20–15. Amendment No. 112, adopted May 27, 1941.
20–16. Amendment No. 115, adopted June 6, 1941.
20–17. Amendment No. 117, adopted June 13, 1941.
20–18. Amendment No. 118, adopted June 13, 1941.
20–19. Amendment No. 125, adopted August 5, 1941.
20–20. Amendment No. 126, adopted August 5, 1941.
20–21. Amendment No. 127, adopted August 15, 1941.

Part 21. Printed November 15, 1940.
21–1. Amendment No. 87, adopted December 20, 1940.
21–2. Amendment No. 101, adopted February 25, 1941.
21–3. Amendment No. 115, adopted June 6, 1941.

Part 22. Adopted, effective September 15, 1941.

Part 23. Canceled by paragraph 1, Amendment No. 35, effective May 1, 1940.

Part 24. Printed May 1, 1940.
24–1. Amendment No. 44, adopted May 10, 1940.
24–2. Amendment No. 61, adopted July 12, 1940.
24–3. Amendment No. 73, adopted September 20, 1940.
24–4. Amendment No. 75, adopted October 4, 1940.
24–5. Amendment No. 87, adopted December 20, 1940.
24–6. Amenment No. 109, adopted May 16, 1941.

Part 25. Canceled by paragraph 1, Amendment No. 39, effective May 1, 1940.

Part 26. Printed October 4, 1940.
26–1. Amendment No. 87, adopted December 20, 1940.

Part 27. Printed July 15, 1940.
27–1. Amendment No. 74, adopted September 20, 1940.
27–2. Amendment No. 75, adopted October 4, 1940.
27–3. Amendment No. 87, adopted December 20, 1940.

Parts 28 to 39. Unassigned.

Part 40. Printed November 1, 1940.
40–1. Amendment No. 85, adopted December 13, 1940.
40–2. Amendment No. 89, adopted January 7, 1941.
40–3. Amendment No. 102, adopted February 25, 1941.
40–4. Amendment No. 129, adopted September 5, 1941.
40–5. Amendment No. 133, adopted September 30, effective October 1, 1941.

Parts 41 to 49. Unassigned.

Part 50. Printed November 1, 1940.
50–1. Amendment No. 87, adopted December 20, 1940.
50–2. Amendment No. 113, adopted May 27, 1941.

Part 51. Printed May 1, 1940.
51–1. Amendment No. 75, adopted October 4, 1940.
51–2. Amendment No. 87, adopted December 20, 1940.
51–3. Amendment No. 128, adopted August 19, 1941.

Part 52. Printed May 1, 1940.
52–1. Amendment No. 75, adopted October 4, 1940.
52–2. Amendment No. 84, adopted December 13, 1940.
52–3. Amendment No. 87, adopted December 20, 1940.

Part 53. Printed September 15, 1940.
53–1. Amendment No. 75, adopted October 4, 1940.
53–2. Amendment No. 87, adopted December 20, 1940.

Parts 54 to 59 Unassigned.

Part 60. Printed October 4, 1940.
60–1. Amendment No. 76, adopted October 11, 1940.
60–2. Amendment No. 77, adopted October 18, 1940.
60–3. Amendment No. 80, adopted November 12, 1940.
60–4. Amendment No. 86, adopted December 13, 1940.
60–5. Amendment No. 90, adopted January 7, 1941.
60–6. Amendment No. 93, adopted January 21, 1941.
60–7. Amendment No. 95, adopted February 21, 1941.
60–8. Amendment No. 96, adopted February 21, 1941.
60–9. Amendment No. 102, adopted February 25, 1941.
60–10. Amendment No. 104, adopted February 21, 1941.
60–11. Amendment No. 106, adopted April 15, 1941.
60–12. Amendment No. 108, adopted May 13, 1941.
60–13. Amendment No. 114, adopted June 6, 1941.
60–14. Amendment No. 119, adopted June 20, 1941.
60–15. Amendment No. 120, adopted June 24, 1941.
60–16. Amendment No. 121, adopted June 24, 1941.
60–17. Amendment No. 123, adopted August 1, 1941.
60–18. Amendment No. 124, adopted August 1, 1941.
60–19. Amendment No. 127, adopted August 15, 1941.
60–20. Amendment No. 135, adopted October 10, 1941, effective December 1, 1941.

Part 61. Printed January 1, 1941.
61–1. Amendment No. 91, adopted January 14, 1941.
61–2. Amendment No. 94, adopted February 4, 1941.
61–3. Amendment No. 97, adopted February 21, 1941.
61–4. Amendment No. 100, adopted February 21, 1941.
61–5. Amendment No. 102, adopted February 25, 1941.
61–6. Amendment No. 103, adopted March 6, 1941.
61–7. Amendment No. 115, adopted June 6, 1941.
61–8. Amendment No. 120, adopted June 24, 1941.
61–9. Amendment No. 122, adopted July 29, 1941.
61–10. Special Regulation Serial No. 182 permitting scheduled air carriers in air transportation to operate multiengine land aircraft on a direct route between Keyport, N. J., and New York Municipal Airport, LaGuardia Field, N. Y., over the lower bay of New York Harbor at a distance beyond gliding distance from the shore without the aid of power, when such operation is authorized by the Administrator in the interest of safety, adopted August 21, 1941.
61–11. Amendment No. 129, adopted September 5, 1941.
61–12. Amendment No. 130, adopted September 12, 1941.
61–13. Amendment No. 132, adopted September 30, effective October 1, 1941.
61–14. Special Regulation Serial No. 188 permitting air carrier aircraft engaged in scheduled air transportation taking off from the Washington National Airport to be banked when an altitude of at least 300 feet has been attained and the aircraft has passed over the boundaries of the Washington National Airport, adopted September 30, 1941.
61–15. Amendment No. 134, adopted September 30, effective October 1, 1941.
61–16. Special Regulation Serial No. 192 permitting scheduled air carriers to operate multiengine land aircraft on a direct route between Oakland, Calif., and San Francisco, Calif., over San Francisco Bay at a distance beyond gliding distance from shore without the aid of power when such operation is authorized by the Administrator, adopted October 3, 1941.

Parts 62 to 89. Unassigned.

Part 90. Canceled by Regulation 601–A–1, adopted August 20, 1938.

Parts 91, 92, and 93. Canceled, Amendment No. 17, adopted July 11, 1939.

Part 94. Canceled by Regulation No. 601–A–1, adopted August 20, 1938.

Parts 95 and 96. Canceled, Amendment No. 17, adopted July 11, 1939.

Part 98. Printed November 15, 1940.

Part 99. Printed November 15, 1940.

The following are amendments adopted under the new system:

AMENDMENT 60–21.....*October 17, 1941*

Effective November 1, 1941, amending section 60.21 so as to include in the proper alphabetical order the designation of the following airports as control airports (city and name of airport are given in each case):

Albuquerque, N. Mex., Albuquerque Municipal Airport; Augusta, Ga., Augusta Municipal Airport (Daniel Field); Bangor, Maine, Bangor Municipal Airport; Boise, Idaho, Boise Municipal Airport (Gowen Field); Charlotte, N. C., Charlotte Municipal Airport; Des Moines, Iowa, Des Moines Municipal Airport; East Baton Rouge, La., East Baton Rouge Municipal Airport; Fort Wayne, Ind., Fort Wayne Municipal Airport (Baer Field); Fresno, Calif., Fresno Air Base; Houlton, Maine, Houlton Municipal Airport; Lake Charles, La., Lake Charles Municipal Airport; Las Vegas, Nev., Las Vegas Municipal Airport; Little Rock, Ark., Little Rock Municipal Airport (Adams Field); Manchester, N. H., Manchester Municipal Airport; Meridian, Miss, Meridian Municipal Airport, (Key Airport); Midland, Tex., Midland Municipal Airport; Orlando, Fla., Orlando Municipal Airport; Presque Isle, Maine, Presque Isle Municipal Airport; Salinas, Calif., Salinas Municipal Airport (American Legion Airport); Savannah, Ga., Savannah Municipal Airport; Everett, Wash., Snohomish County Airport; Tallahassee, Fla., Tallahassee Municipal Airport (Dale Mabry Field); Tucson, Ariz., Tucson Municipal Airport; West Palm Beach, Fla., West Palm Beach Municipal Airport (Morrison Field); Wichita Falls, Tex., Wichita Falls Municipal Airport (Sheppard Field).

AMENDMENT 61–17.....*October 24, 1941*

Effective November 8, 1941.

61.7803 PILOT'S COMPARTMENT.—(a) No person except a member of the operating crew or an air carrier inspector of the Administrator of Civil Aeronautics shall be admitted to the pilots' compartment during such flight unless his admission is approved by the first pilot and such person is one of the following: (1) An employee of the Federal Government or of an air carrier or other aeronautical enterprise, whose duties are such that his presence in the cockpit is necessary or advantageous to the conduct of safe air carrier operations or the improvement of the safety of such operations;[1] (2) a person whose presence in such compartment has been specifically authorized by the management of the air carrier operating the aircraft and by the Administrator.

(b) No person shall occupy a seat in the pilot's compartment or the companionway thereto unless such seat is securely attached to the structure of the aircraft and is provided with a safety belt which shall be kept fastened by the occupant throughout his occupancy of such seat.

(c) No person not a member of the flight crew, or engaged during flight in the checking of pilots' operations for the Federal Government or for the air carrier, shall be admitted to the pilots' compartment during scheduled flight unless a seat is also available for his use in the passenger compartment.

(d) Any air carrier inspector of the Administrator of Civil Aeronautics shall be admitted to the pilots' compartment of an air carrier aircraft at any time while in the performance of his official duty.

[1] Federal employees who deal responsibly with matters relating to air carrier safety and such air carrier employees as pilots, dispatchers, meteorologists, communication operators, and mechanics whose efficiency would be increased by familiarity with flight conditions in the pilots' compartment may be considered eligible under this requirement. Employees of traffic, sales, and other air carrier departments not directly related to flight operations cannot be considered eligible unless authorized under (2).

AMENDMENT No. 60–22—*October 28, 1941*

Effective Nov. 15, 1941.

Appendix F

Control Zones of Intersection

"60.22 Control zones of intersection designation.—The radio range station of the Civil Aeronautics Administration located at each of the following cities is designated as the center of a control zone of intersection: Albany, N. Y.; Albuquerque, N. Mex.; Alma, Ga.; Amarillo, Tex.; Belgrade, Mont.; Billings, Mont.; Bismarck, N. Dak.; Boston, Mass.; Brownsville, Tex.; Burlington, Vt.; Charleston, S. C.; Cheyenne, Wyo.; Concord, N. H.; Corpus Christi, Tex.; Daytona Beach, Fla.; Denver, Colo.; Des Moines, Iowa; El Paso, Tex.; Fargo, N. Dak.; Grand Island, Nebr.; Great Falls, Mont.; Helena, Mont.; Houston, Tex.; Huron, S. Dak.; Jackson, Miss.; Jacksonville, Fla.; La Crosse, Wis.; Lake Charles, La.; Laramie, Wyo.; Memphis, Tenn.; Melbourne, Fla.; Miami, Fla.; Millinocket, Maine; Minneapolis, Minn.; Mobile, Ala.; New Orleans, La.; Omaha, Nebr.; Orlando, Fla.; Portland, Maine; Raleigh, N. C.; San Antonio, Tex.; Shreveport, La.; Sioux Falls, S. Dak.; Syracuse, N. Y.; Tallahassee, Fla.; Tampa, Fla.; Whitehall, Mont.; Wichita, Kans."

"60.2401 Green civil airway No. 2 airway traffic control areas (Seattle, Wash., to Boston, Mass.).—Those portions of green civil airway No. 2: From Boeing Field, Seattle, Wash., to a line extended at right angles across such airway through a point on the center line thereof 25 miles northwest of Superior, Mont.; from a line extended at right angles across such airway through a point on the center line thereof 25 miles southeast of the La Crosse, Wis., radio range station, to the intersection of the center line of the on-course signal of the east leg of the Detroit, Mich. (Wayne County Airport), radio range and the U. S.-Canadian border; from the intersection of the center line of the on-course signal of the west leg of the Buffalo, N. Y., radio range and the U. S.-Canadian border, to a line extended at right angles across such airway through a point on the center line thereof 25 miles east of the Buffalo, N. Y., radio range station."

"60.2430 Blue civil airway No. 1 airway traffic control areas (Pendleton, Oreg., to Spokane, Wash.).—All of blue civil airway No. 1."

Safer Flight

(*Continued from page 286*)

first intended landing, and other pertinent information. This plan must be approved by the center before he can take-off.

To collect flight plans and disseminate instructions, the airway traffic control system uses a wide network of ground communications. Each center is connected with radio stations in its area by leased telephone or teletype lines. These stations in turn communicate with the planes in flight. The centers utilize C. A. A. airways communications stations, air carrier radio stations, Army and Navy radio stations, and airport traffic-control towers. Upon completion of present plans, communication within a control area will be conducted by interphone, while an express teletype system will be used for the exchange of information between control centers.

During flight, the pilot must keep a constant listening watch on his radio for instructions which may be issued by the control center through a suitable ground radio station. He must report by radio the time and altitude at which he passed over designated radio fixes. A "fix" is a point on an airway which serves to indicate a plane's geographical position when it is being flown by instruments. Fixes are identified through radio marker stations and several other means. Unexpected weather conditions and any other important information regarding the aircraft's movement should also be reported by the pilot. Upon arriving at his destination, he must file an arrival message. Before making any changes in an approved flight plan, a pilot must obtain the approval of the control center having jurisdiction.

At the control center a record is kept of all aircraft movements on a large flight-progress board. This gives the controller a clear picture of the traffic on an airway at any given time and enables him to direct it so as to insure the greatest safety.

Air Navigation Facilities

(*November 1, 1941*)

Airports

Airports with servicing [1]	1,009
Airports with paved runways	291
Airports with two-way radio	397
Lighted airports [2]	657
Airports by class:	
Municipal	1,073
Commercial	871
Private	30
Army	77
Navy	36
Misc. Govt.	42
C. A. A. Int. Flds.	283
Total	2,412

Seaplane Bases

Army, Navy, Coast Guard, Marine Corps	36
Other seaplane bases and anchorages	329
Total	365
Seaplane bases having any night lighting equipment	22

Radio Aids

Ranges (11 in Alaska, 2 in Hawaii)	303
Range stations simultaneous, with voice (10 in Alaska, 2 in Hawaii)	194
Range stations nonsimultaneous, with voice	99
Range stations, no voice (1 in Alaska)	10
Broadcast stations (11 in Alaska, 2 in Hawaii)	118
Broadcast stations, simultaneous (10 in Alaska, 2 in Hawaii)	115
Broadcast stations, nonsimultaneous (1 in Alaska)	3
Marker stations	35
Fan markers	149
Voice (only) stations (5 in Alaska)	18
Z markers (not at range stations)	3

[1] Servicing: hangar, repairs, and fuel available.

[2] Lighted airport: boundary and beacon and/or flood lights.

Airport Projects Approved

In accordance with the provisions of section 303 of the Civil Aeronautics Act, the Administrator of Civil Aeronautics has issued certificates of air navigation facility necessity, authorizing the expenditure of Federal funds in the operation of the following projects:

ARIZONA	
Douglas, Arizona Municipal Airport (CAA–WPA)	$532,072
CALIFORNIA	
Hawthorne, Municipal Airport (WPA)	128,490
Redding, Municipal Airport (WPA)	198,443
FLORIDA	
Leesburg, Municipal Airport (CAA–WPA)	293,724
GEORGIA	
Hapeville, Municipal Airport (WPA)	1,292
HAWAII	
Port Allen, Molokai, Maui, Hilo (WPA)	25,000
LOUISIANA	
Shreveport, Municipal Airport (WPA)	107,379
MAINE	
Caribou, Municipal Airport (WPA)	276,174
MICHIGAN	
Sault Ste. Marie, Municipal Airport (WPA)	209,310
MONTANA	
Butte, Municipal Airport (CAA–WPA)	130,971
NEVADA	
Elko, Municipal Airport (CAA–WPA)	148,364
NEW MEXICO	
Carlsbad, Municipal Airport (WPA)	23,677
NORTH CAROLINA	
Asheville, Asheville-Henderson Airport (WPA–CAA)	363,177
NORTH DAKOTA	
Bismarck, Municipal Airport (CAA–WPA)	313,661
Fargo, Hector Field (WPA)	10,544
OREGON	
Medford, Municipal Airport (WPA)	67,773
North Bend, Municipal Airport (WPA)	87,361
PENNSYLVANIA	
Waynesburg, Municipal Airport (NYA)	3,930

– Keep 'Em Flying –

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